

E DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP

12 COMMERCE DRIVE, CRANFORD, NEW JERSEY 07016-1101 (201) 272-8300

October 17, 1988

Ma. Janet Feldstein U.S. Environmental Protection Agency 26 Federal Plaza New York. New York 10278

> Re: SCP Site RI/FS Carlstadt. New Jersey

Dear Ms. Feldstein:

Dames & Moore will shortly be evaluating the hydrologic relationship between the SCP site and Peach Island Creek. evaluation will be used as input into the Fessibility Study for addressing remedies for the water table aquifer. The purpose of this letter is to inform you of the objectives of the evaluation and the methods Dames & Moore intends to use in performing this evaluation.

The purpose of the hydrologic evaluation is to provide an understanding of the relationship between the SCP sits and Peach Island Creek. The objective of the evaluation is to estimate the discharge/ recharge rate between the water table aquifer and the Greek. The methods for achieving this objective are discussed in the following paragraphs.

The first step involves the computation of ground water flow based on an estimation of the necessary variables/parameters. average ground water gradient in the water table aquifer on-site close to the Creek will be computed. This will be based on ground water and creek water elevation measurements. The saturated thickness of the water table aquifer, close to the Creek at approximately the same location at which the gradient is estimated, will be estimated from boring log data. as well as from water table data. Then an overall value for the horizontal permeability of the water table aquifer near the Creek will be estimated from the results of slug tests previously performed on shallow monitoring wells. Based on these values, an estimate for the average rate of discharge/recharge of the shallow ground water into/from the Creek will be obtained by means of the Darcy's Law equation.

As a backup to this estimate of the ground water flow relationship with respect to the Creek, the ground water discharge/ recharge will also be estimated based on an analysis of the water budget for the site and flow net analysis of the water table contour maps for the site. By evaluating rainfall records in the area and estimating potential evapotranspiration at the site, the recharge rate for the water table aquifer will be estimated. By flow net analysis, the ground water flow can be apportioned to the appropriate discharge/recharge areas of the site.

DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP

Ms. Janet Feldstein October 17, 1988 Page - 2 -

The creek water elevation will be varied in the analysis so that a range of conditions can be evaluated. The low flow condition for the Creek will be based on the minimum average 7-day, 10-year flow. Since this information is not available for Peach Island Creek, it will be obtained for the surface water stations monitored by the U.S. Geologic Survey that are within a 10 or 15-mile radius of the SCP site. From these data, we will estimate the minimum average 7-day, 10-year flow on a unit area basis, which will then be applied to Peach Island Creek at the SCP site by multiplying it by the size of the rainfall catchment area upstream of the site. The assumption is that the ground water basin is equal in area to the rainfall catchment basin. In the event that the estimates of stream flow in Peach Island Creek are evaluated to have an unacceptable level of uncertainty for use in this analysis, it may be necessary to install a stream gaging station on Peach Island Creek at the site. We will advise the Agency of the need for this at the completion of the analysis.

The results of the above evaluations and analyses will be incorporated into the Feasibility Study report. All assumptions will be listed, and the calculations, interpretations and conclusions will be presented and discussed.

If you have any questions on this program, please contact the undersigned.

Very truly yours,

DAMES & MOORE

Gerard M. Coscia, P.B.

Project Manager

GMC/Jhm

cc: W. Warren

J. Koczan

DAMES & MOORE

TELECOPIER COVER SHEET

		Date: 19	17/88
TOTAL N	umber of pages (including co	ver letter): _	3
	SEPA		
TELECOP:	IER NUMBER n number if no direct line):	212 - 2	64-8100
	G. Coscin	(area code)	(number)
	DAMES & MOORE		
-	12 Commerce Drive		
-	Cranford, New Jersey 070	16	

If you have any difficulty receiving any of the transmission, call (201) 272-8300.

We are transmitting from a XEROX 295 machine.

If you wish to transmit any documents to this office, the direct line to our automatic receiving equipment is (201) 272-3940.

After dialing the number, begin transmitting after the tone.